

BRIEF

Energy Insecurity among Families with Children

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The National Center for Children in Poverty (NCCP) is dedicated to promoting the economic security, health, and well-being of America's low-income families and children. Using research to inform policy and practice, NCCP seeks to advance family-oriented solutions and the strategic use of public resources at the state and national levels to ensure positive outcomes for the next generation. Founded in 1989 as a division of the Mailman School of Public Health at Columbia University, NCCP is a nonpartisan, public interest research organization.

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What is Energy Insecurity?

Energy insecurity (EI) reflects an inability to adequately meet basic household heating, cooling, and energy needs. EI is a pervasive and often-overlooked problem for low-income families with children. Conceptually, EI is a multi-dimensional construct that describes the interplay between structural conditions of housing and the costs of household energy. EI is characterized by three primary elements: *physical EI* – deficient and inefficient housing structures, *economic EI* – disproportionate share of household income allocated to utility expenses, and *coping EI* – energy-related coping strategies that could potentially compromise the quality of the home environment and have negative health consequences.^{1, 2, 3}

The relevance of EI is indicated by the fact that lower-income families are more likely than their counterparts with higher-incomes to: (1) live in housing with heating and electrical problems, (2) have experienced multiple heating equipment breakdowns, (3) have had an interruption in utility service, (4) have inadequate insulation and insufficient heating capacity, and (5) report being uncomfortably cold for more than 24 hours during the winter.⁴ As a result of these energy deficiencies, energy costs tend to be comparatively higher for lower-income groups, thus reducing their ability to purchase other basic necessities of life such as food, as they face the “heat or eat” dilemma.^{5, 6, 7} Despite the prevalence of

How to Measure Energy Security

A household energy security indicator developed by Cook et al. includes three categories to assess energy security. They are: (1) “energy-secure,” which indicates no energy problems; (2) “moderate energy insecurity,” defined as utility shutoff threatened in the past year; and (3) “severe energy insecurity,” indicated by heating the home with a cooking stove, utility shutoff, or ≥ 1 day without heat/cooling in past year.⁷ This indicator was used in a study based on pediatric emergency room visits. Its findings suggest that children in moderately and severely energy-insecure homes are more prone to food insecurity, hospitalizations and poorer health ratings, and developmental concerns as reported by parents shown to experience “severe energy insecurity.” While the results are compelling, this indicator is admittedly a simple but effective measure intended for use in clinical settings, making it possible for physicians to determine if their patients might be experiencing EI. Undoubtedly, more comprehensive measures of EI are needed.

Source: Cook, J. T., Frank, D. A., Casey, P. H., Rose-Jacobs, R., Black, M. M., Chilton, M., ... & Cutts, D. B. (2008). A brief indicator of household energy security: Associations with food security, child health, and child development in US infants and toddlers. *Pediatrics*, 122(4), e867-e875

EI and implications for the health and well-being of families with children, there are no national statistics available to both illuminate this problem and generate more attention at the policy level.

This brief describes the extent of economic EI by family income, demographic characteristics, and geographical area, using the latest and most comprehensive data available. We examine the disproportionate share of household income allocated to energy expenses among families with children, defining this as economic EI, and refer to households with more than 10 percent of energy burden as “energy insecure.” This measure is based on the Department of Energy’s annual estimates of homes that experience an energy affordability gap.^{6,7}

This brief looks at the prevalence of economic EI among households with children under age 18 in the United States, using the 2011 American Community Survey (ACS) data. Economic EI is measured using

household energy expenditures, which include home heating, cooling, appliances, and lighting as a percentage of annual household income. For instance, if a family of four had an annual household income at the federal poverty level (FPL) of \$22,350 in 2011 and its gross annual energy bill was \$2,500, the household’s gross economic EI would be above 10 percent. This family would be categorized as experiencing economic EI. This situation may materialize into trade-offs with other competing expenses such as food and shelter, thus reflecting a potential “trifecta of insecurity” in meeting three basic needs: housing, food and energy.⁸ Clearly, this issue has important implications for children’s well-being, given the unequal distribution of economic EI and its disproportionate impact on low-income families.

Who is Facing Economic EI?

Table 1: Rates of economic EI among families with children under age 18 by geography and family characteristics

		% with economic EI
Families with children under age 18		18%
Income	Low income (under FPL 200%)	44%
	Above low-income (FPL 200% and above)	2%
Region	Northeast	18%
	Midwest	19%
	South	22%
	West	12%
Housing status	Homeowners	12%
	Renters	30%
	Others (neither own nor rent)	41%
Family head’s race/ethnicity^a	Non-Hispanic white	14%
	Non-Hispanic black	35%
	Hispanic ^b	21%
	Asian or Pacific Islanders	9%
	Other	25%
Parental nativity	Foreign born ^c	18%
	U.S. born	18%
Family structure	Families with young children (age 0-8)	20%

Data source: NCCP analysis of American Community Survey, 2011

^a Family head could report his or her race as one or more of the following: “white,” “black,” “American Indian or Alaskan Native,” or “Asian and/or Hawaiian/Pacific Islander.” In a separate question, parents could report whether they were of Hispanic ethnicity. For the data reported on the NCCP web site, children who were reported to be of Hispanic ethnicity were categorized as Hispanic, regardless of their reported race.

^b Hispanic groups can be white or black.

^c To be considered a foreign-born household, every parent/caregiver living in the household with the child must be foreign born. This includes single-parent/caregiver families and married-parent/caregiver families

What Are the Characteristics of Families Who Are Facing Economic EI?

Differences in families facing economic EI are defined by three main factors: (1) proximity to the federal poverty line, (2) regional location, and (3) race/ethnicity and immigration status. First, there are gaps between families at or near the poverty line and those well above it. Whereas 44 percent of families under 200% of FPL face economic EI, only 2 percent of families above 200% of FPL face economic EI. Second, there are regional differences. Families in the South have the highest rates of economic EI (22%), followed by those in the Midwest (19%), Northeast (18%), and West (12%). Third, differences by race, ethnicity, and immigration status exist. At 35 percent, Black families have the highest rate of economic

EI, followed by Hispanic/Latino families at 21 percent. Asian/Pacific Islander families have the lowest economic EI rate at 9 percent. There was no difference in the status of economic EI by parental nativity.

Economic EI is experienced across the economic spectrum, though it disproportionately affects those nearest the poverty line. Over 80 percent of families living in extreme poverty (with a family income less than 50% of the FPL) face economic EI. About 60 percent of families whose income is 50-99 percent of the FPL also face economic EI. Among families significantly above the federal poverty line, close to 10 percent of families at 200-249 percent of the FPL face economic EI.

Figure 1: Percentage of economic energy insecurity by poverty level

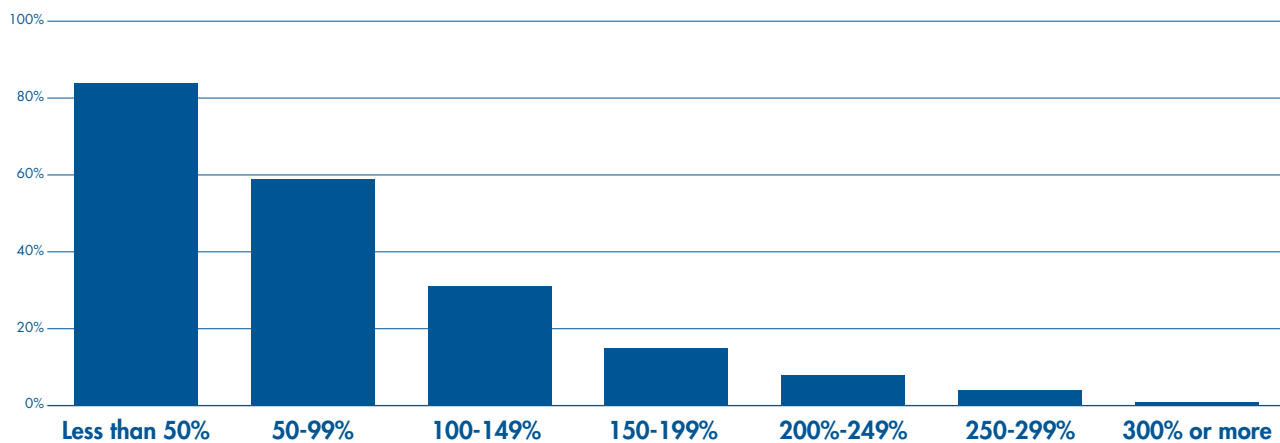
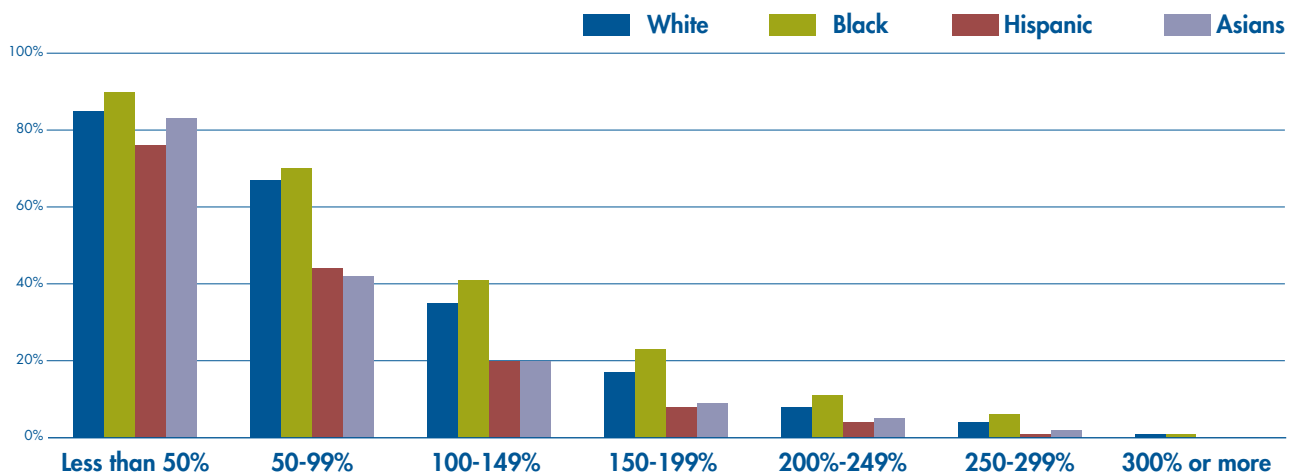
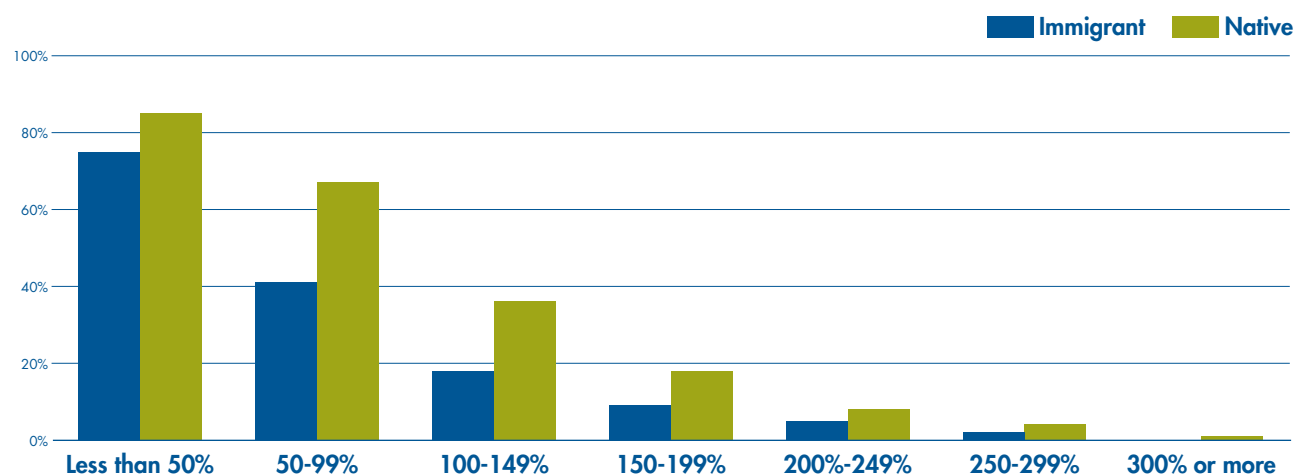


Figure 2: Percentage of economic energy insecurity by poverty level and race/ethnicity



Data source for Figures 1-2: NCCP analysis of American Community Survey, 2011

Figure 3: Percentage of economic energy insecurity by poverty level and immigration status



Data source: NCCP analysis of American Community Survey, 2011

Economic EI affects race/ethnic groups differently at each poverty level. More than 10 percent of Black families face economic EI even when they are between 200 and 249 percent of the FPL; the rates are lower among White, Hispanic, and Asian families. Overall, Asian and Hispanic families experience a much lower prevalence compared with other racial/ethnic families at the same poverty levels, with the exception of Asian families, who are under 50 percent of the FPL, and Blacks, who are the highest at all income levels. Due to differences in immigration status across racial/ethnic groups, we also examined the prevalence of economic EI by poverty level and immigration status.

There is considerable variation in the share of families with economic EI by immigration status and poverty level. While, overall, immigrant and non-immigrant families have the same average rate of economic EI (18%) (as shown in Table 1), the burden varies for immigrant families, particularly above 50 percent of the FPL. For example, at 50-99 percent of the FPL, the rate of economic EI is 67 percent for non-immigrant families while it is 41 percent for immigrant families. This suggests that immigrant families are comparably less burdened by economic EI than native born families, even at equivalent levels of poverty.

Further, there are large racial/ethnic variations in the rate of economic EI among immigrant families, with immigrant Hispanic and Asian families having a much lower rate of economic EI than immigrant Whites and Blacks. However, among non-immigrant families, the economic EI rate does not differ considerably by race/ethnicity (The result is shown in Appendix, Table A1). A consistent pattern of lower economic EI by immigrant and race/ethnicity was also found across the regions of residence; thus, variations in economic EI cannot be attributed to a difference in the geographic locations where specific racial/ethnic and immigrant groups are more likely to reside. Although these results are not shown, the data are available upon request.

What Are the Characteristics of Families with Children Affected by Economic EI?

- ◆ More than half of families affected by economic EI are living in poverty (under 100% of the FPL) and about one-third are extremely poor.
- ◆ Geographically, the largest proportion (46 percent) of children in households with economic EI reside in the South.
- ◆ Over half of families with economic EI are renters; 41 percent are homeowners.
- ◆ Approximately half of all households facing economic EI are Black, and about one-third are White.
- ◆ The share of immigrant families is relatively low among families with economic EI.

Figure 4: Poverty level among families with economic energy insecurity

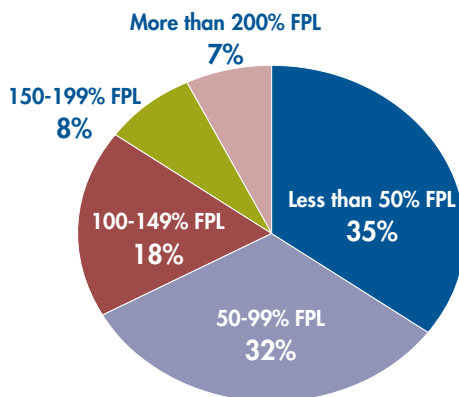


Figure 5: Geographic regions where families with economic energy insecurity reside

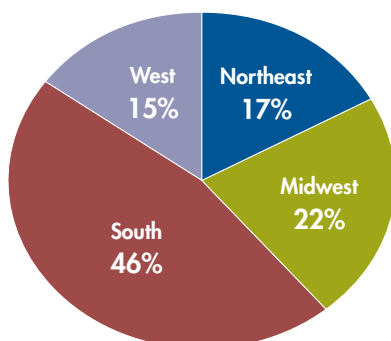


Figure 6: Housing tenure of families with economic energy insecurity

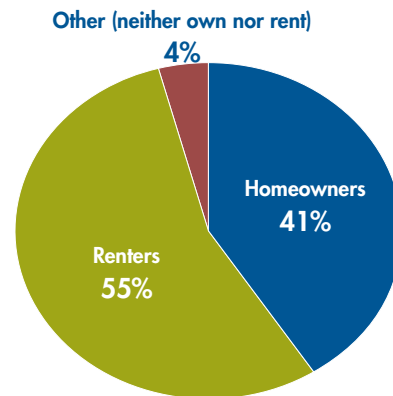


Figure 7: Race/ethnic composition of families facing economic energy insecurity

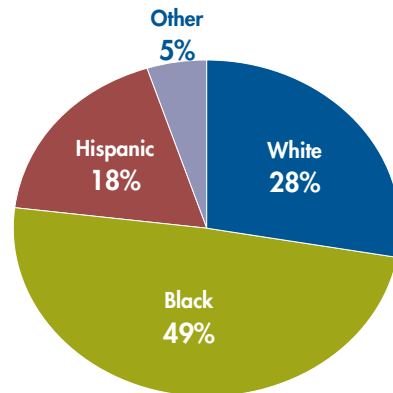
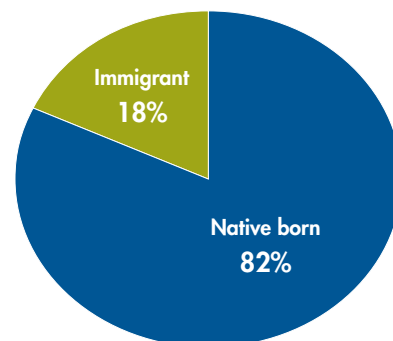


Figure 8: Immigration status of families facing economic energy insecurity



Data source for Figures 4-8: NCCP analysis of American Community Survey, 2011

Current Policies to Address Economic EI

The Low-Income Home Energy Assistance Program (LIHEAP) is the main safety net benefit to provide relief from economic EI. A federally mandated block grant program, LIHEAP provides assistance to households burdened by disproportionate energy expenditures.⁹ LIHEAP funding is dispersed to utility companies for the benefit of low-income households, helping provide assistance typically on a once-per-year basis for costs associated with home energy bills, energy crises, weatherization, and minor energy-related home repairs. Under federal law, eligible households qualify for LIHEAP benefits if their income falls below either 150 percent of the federal poverty level or 60 percent of the state median income level, whichever is higher.^{10, 11, 12} LIHEAP currently covers only a fraction of the overall need. Of the estimated 10-15 million homes eligible for benefits in 2012, a mere 5.5 million were served. Many others never applied for benefits despite eligibility, due in large part to lack of awareness of the program.¹³

Already constrained, LIHEAP funding continues to decrease in spite of additional needs borne from steadily rising energy costs.^{14, 15} Most recently, LIHEAP suffered a \$1.2 billion budget cut from 2011-2013, leaving many vulnerable households without much-needed assistance in the aftermath of a housing crisis, an economic recession, and record unemployment.¹⁶ Programmatic gaps in LIHEAP also abound. Evidence has demonstrated that weatherization and energy-efficiency upgrades can reduce utility bills by 30 to 50 percent.¹⁷ Nevertheless, the majority of LIHEAP funding is allocated to utility rate discounts, debt forgiveness, and deposit or fee waivers rather than energy-efficiency interventions.¹⁸

The Weatherization Assistance Program (WAP) has also experienced similarly drastic cuts in the aftermath of Stimulus Bill funding. Further, the federal government has supported energy conservation efforts with initiatives such as the Energy Conservation Action Plan and homeowner tax credits for energy-efficiency upgrades. However, the emphasis has not been on low-income populations or affordable housing stocks *per se*. These funding and programmatic gaps are inconsistent with the recognized need to modernize our nation's energy policy and reduce energy consumption. Nevertheless, private foundations and non-profit

Program Highlight: Green & Healthy Homes Initiative™

The Green & Healthy Homes Initiative™ (GHHI) is a national leader in developing, implementing, and promoting programs and policies that create energy-efficient, healthy, and safe environments in underserved households. Specifically, GHHI offers weatherization and energy-efficiency retrofits that include improvements such as insulation, weather stripping and caulking around windows, boiler replacements, and the installation of Energy Star appliances and CFL light bulbs. GHHI energy-efficiency interventions intend to keep outside elements (including weather and pests) outside of the home; ensure indoor air quality is healthy and free of mold, moisture and contaminants; and reduce utility costs for low-income residents. GHHI's integrated housing intervention framework is supported by the U.S. Department of Housing and Urban Development, the Centers for Disease Control and Prevention, the U.S. Department of Energy, in addition to national and local foundations in 17 sites across the country.

GHHI is helping families realize tangible improvements in their health and well-being. For example, among families enrolled in GHHI's Baltimore program, which provides improvements to homes with children with asthma, caregivers reported a 43 percent decrease in emergency room visits and a 69 percent decrease in hospitalizations to treat their child's uncontrolled asthma in the six months following a GHHI intervention, compared with the six months prior to the work being completed. These decreases mean, among other benefits, lower medical costs for families and for taxpayers, fewer days of missed school by children and missed work days by their caregivers, and peace of mind for families knowing that their child's asthma is under control.

Pre-post utility tracking on GHHI-improved homes is providing additional benefits to families in reductions in household energy costs. Among a subset of Baltimore households with 24 months of pre-post utility data use and cost data, households are saving \$30 per month on their electricity and natural gas bills for an average savings of \$363 per year (\$182 average annual savings on electricity and \$151 for natural gas). These are crucial savings for the economically disadvantaged families who qualify for GHHI services – savings that families are able to contribute towards other expenses.

Source: Personal communication with GHHI administrative staff.
For more information on GHHI, visit: www.greenandhealthyhomes.org

organizations such as the Green and Healthy Homes Initiative are addressing the low-income weatherization issue in innovative ways (see above).

Recommendations

Based on the evidence presented in this brief, two recommendations in the realms of research and policy are presented below:

- ◆ **Additional research and initiatives are needed to more comprehensively define energy insecurity and better measure and collect data.** The measurement of energy insecurity is still limited and underdeveloped in the United States. Further, there is a need for the inclusion of more detailed data related to energy use in national surveys so that we can better understand multi-dimensional aspects of energy insecurity. Such data will also allow researchers to examine the long-term impact of energy insecurity on child health and well-being, and identify policy solutions.

While this study found a lower rate of economic EI among immigrant families, the specific reasons that contribute to differences by immigration status and poverty level remain unknown and merit further attention. For instance, coping strategies to minimize utility costs (e.g., using the stove for improvised heat, setting the thermostat at a subpar temperature, or failing to use an air conditioner) could potentially compromise the quality of the home environment and, in turn, negatively affect child and family well-being. Thus, it is important to further examine other aspects of energy insecurity, especially in vulnerable populations.

- ◆ **Federal and state governments should increase their efforts to address energy inefficiency and structural deficiencies of low-income housing.** While the current LIHEAP policy priorities may solve the short-term fuel assistance needs of poor households, current policies do not address the problem of energy inefficiencies due to the poor quality and insufficient heating/cooling infrastructure of low-income housing. Investing more widely in weatherization and energy retrofits have the potential to create greater efficiencies, reduce costs, mend problematic housing conditions, and eliminate asthma and stress triggers in the home, while also reducing carbon emissions all at once. This approach is best exemplified in work conducted by GHFI. In addition, we recommend that federal and state programs bolster their communications and grassroots efforts to reach underserved communities where there is a glaring lack of awareness of existing programs such as LIHEAP and WAP that address burdens associated with energy insecurity.

Appendix 1

Table A1: The rate of economic EI by race/ethnicity and immigration status

	Whites		Black		Hispanic		Asian	
Ratio of family income to FPL	Foreign born	US born	Foreign born	US born	Foreign born	US born	Foreign born	US born
Less than 50%	87%	84%	81%	90%	71%	79%	82%	78%
50-99%	52%	67%	53%	72%	39%	54%	39%	49%
100-149%	28%	36%	25%	43%	17%	27%	20%	25%
150-199%	14%	17%	16%	23%	7%	11%	9%	10%
200-249%	7%	8%	12%	11%	4%	5%	4%	6%
250-299%	5%	4%	4%	7%	1%	2%	2%	5%
300% and above	1%	1%	1%	1%	0.4%	0.4%	0.2%	0.1%

Data source: NCCP analysis of American Community Survey, 2011

Endnotes

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